REMARKS:

The amendment does not involve new matter. The information added to page 4 of the specification is supported by the inherent disclosure of the application and the original drawings. The information added to page 5 is supported by column 3, lines 9-12, of U. S. Patent No. 5,372,876, which was incorporated by reference. The information added to page 10 is calculated from the data presented in the table on that page. The new claims are supported by the newly added text, as well as page 8, line 1-3.

As a preliminary matter, the Office Action indicates that the Information Disclosure Statement filed on December 23, 2003 was placed in the file but that the Examiner has not considered the cited references, allegedly because a separate listing of the references meeting the requirements of 37 CFR §1.98 was not included. Applicants filed a Form PTO 1449 with the Information Disclosure Statement, and the Patent and Trademark Office acknowledged receipt of that Form PTO 1449. Attached is a copy of the post card receipt for this item, showing receipt of a Form PTO 1449 listing 56 references. Applicants' filing thus complied with the rules, and the Examiner is requested to consider each of the references cited in the previously filed Information Disclosure Statement. Another copy of the Form PTO 1449 previously filed is attached hereto in order to make it convenient for the Examiner to note that the cited references have been considered.

The title has been amended as requested, and is directed to the invention to which the pending claims are directed.

In the outstanding Office Action, claims 9-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,447,642 (Phan '642) or U.S. Patent No. 5,609,725 (Phan '725) or U.S. Patent No. 5,814,190 (Phan '190) or U.S. Patent No. 5,820,730 (Phan '730) with or without U.S. Patent No. 5,328,757 (Kenney). This rejection is respectfully traversed.

Claim 9 is directed to a method for making a tissue sheet having increased bulk and visual aesthetics using a raised pattern felt. The claim calls for forming paper making fibers into a basesheet; bringing the basesheet into contact with a patterned felt;

pressing the basesheet against the patterned felt to form a pattern in the basesheet; and drying the basesheet. In addition, the claim requires that the felt be made from a water-holding substrate joined to a carrier, and that the carrier has the pattern stitched into it forming a plurality of projections. These projections form the pattern in the basesheet.

Phan '725 describes an imprinting and/or through drying fabric for producing a 3-D web having specific topography when the fabric is used in the through drying process. Such fabrics are well known in the art, but are not related to the felt required by claim 9, as they have no water holding substrate, which is required by claim 9 and is necessary to make the felt useable in a wet-pressed process. Like most through drying fabrics, the fabric of Phan '725 is a highly permeable screen (air permeability of about 600 scfm, (see column 18, line 2)), and not similar to a complex felt structure (sample felt structures of the present invention have a permeability of less than 50 cfm (see the first table on page 7)). A felt is a less permeable structure because it must absorb and hold a significant amount of water expressed from the web in the pressure-roll nip that defines the wet-pressed process. Since the construction and purpose of a fabric and felt are dissimilar, teachings related to a throughdrying/imprinting fabric often do not apply to a felt.

Similar comments apply to Phan '642, which also teaches a fabric rather than a felt. (Phan '642 also discloses a capillary dewatering member 60 which behaves like a felt, but member 60 does not have a pattern formed in it.) It is easy to produce a 3-D fabric, but the technology used for production of a 3-D fabric does not necessarily apply to a felt because the felt must retain good contact with the Yankee dryer during wet pressing in order to facilitate the movement of water from the web into the felt. Additionally, the felt needs to have substantial water-holding capability to contain the water leaving the sheet. This makes a felt considerably different from a fabric. Hence the technology taught in the Phan '725 and Phan '642 is not relevant to the felt called for by claim 9.

Phan '190 and Phan '730 do teach the use of a felt modified to provide a 3-D character to the web. However, both of these patents teach the use of a cured resin to provide the web-contacting structure that gives the web the improved bulk and

potentially some aesthetic qualities. Such felts, and their deficiencies, are discussed in the background section on page 2 of the specification.

The Office Action takes the position that "The only difference between method of the cited references and the claimed invention is that the printing elements are not stitched to the base fabric," but that "stitching or needling the imprinting elements onto a base sheet is known in the art and a recognized form of bonding materials and therefore, would have been obvious to one of ordinary skill in the art." While stitching and needling are recognized forms of bonding, there is nothing in the cited prior art that shows stitching of an imprinting element. Stitching an imprinting element into a felt is not the same as stitching two materials together. Thus whatever is known about stitching to bond materials together would not make it obvious to form projections in a carrier which is part of a felt used in a wet press papermaking process by stitching. If the Examiner is aware of any prior art that teaches the use of stitching to make such projections used as imprinting elements, he should call it to the Applicants' attention.

Kenney discloses paper making clothing. The Office Action asserts that Kenney teaches that papermaking felts can be joined by needling, as well as other techniques. The Office Action further asserts that Kenney evidences "the equivalence of the bonding of the different layers, and thus, the stitching of the layers would have been obvious to one of ordinary skill in the art." Kenney does not, however, suggest any sort of projections, or how such projections could be formed. There is no way that a person of ordinary skill in the art would look at the elevations 261 made from a photosensitive resin in Phan '190, for example, and think that they could be formed by stitching because of anything taught in Kenney. The different ways that layers of papermaking felts can be joined together as suggested in Kenney is irrelevant to ways of making projections. Thus, claim 9, and the claims dependent thereon, are patentable over the cited references.

Moreover, the use of stitching provides unexpected results compared to other known ways of making projections in a felt used in a wet press papermaking process, and the dependent claims further define over the cited references.

It is well known among papermakers that a key attribute a felt must provide is the ability to remove water from the web, store it in the felt and ultimately prevent the water

from flowing back toward and into the web when the pressure pulse of the pressure-roll nip is removed. These attributes all affect the ability of the felt to dewater the web and hence ensure the high production rate associated with the wet-pressed process. (At the same time, the wet-pressed process generally does not produce the bulk associated with the through dried process, and this is one of the reasons why the present invention is so important.) Unfortunately, using the cured-resin process taught in Phan '190 and Phan '730 causes a solid, impermeable block of material to be placed on the surface of the felt that contacts the web, which impedes the flow of water into the felt. Since the cured resin is a solid "plastic" material, it inherently provides an impediment to the flow of water into the felt. With the increased impediment to the flow of water into the felt, there has to be a reduction in the dewatering ability of the felt, and hence it's desirability for use in the wet-pressed process.

Additionally, the pattern of the cured resin top, and hence the pattern imprinted into the web, is limited by the patterns that can be readily achieved using the resin-curing process. It is noteworthy that the patterns shown in Phan '190 and Phan '730 are abstract geometric shapes for the examples where the cured resin is applied to a felt rather than a fabric. For example, consider Figure 8 of '730 which deals with a felt for producing high bulk in the wet-pressed process. The resin cured material is in a continuous geometric pattern rather than butterflies (called for by claim 15) or other multiple distinct images (called for by claim 14) that can be constructed via stitching. In fact, note that Phan '730 teaches the desirability of placing an aesthetically pleasing design, in this case a flower, in the web. However, the aesthetically pleasing design is put in the web in the forming zone via a forming fabric (see column 6, lines 42-47) rather than via the felt.

Similar arguments apply to the Phan '190. Again this patent teaches the same impermeable resin material and a similar geometric pattern rather than a pattern made with multiple distinct images such as butterflies. The felt of Phan '190 would suffer from the same lack of permeability as the felt in Phan '730. Also, examples 3 and 4 of Phan '190 teach the use of the patterned felt, and these two examples use the felt shown in Figures 8A, 8B, and 9B. Again, these embodiments show abstract geometric patterns rather than the multiple distinct images such as butterflies.

The use of the stitched material as claimed provides a key benefit not taught in Phan '190 and Phan '730. Among the advantages of the stitched pattern is the ability to provide almost any selected aesthetically-pleasing image, including abstract geometric shapes such as those in the various Phan references, or multiple distinct images such as butterflies shown in Figure 1 of the present application. Additionally, the density of the stitching can be altered to provide any combination of permeability and shape. For example, compare sample felts 0 and 1 described on pages 7 and 8, where the yarn density, and hence the permeability of the raised pattern in the basesheet, can be varied as desired.

At a minimum, the use of the hard, impermeable plastic resin must limit the size of the images that can be put on the felt due to blockage of water flow into the felt during the wet-pressing process. In the areas of the fabric where the plastic material is located, it is not possible for water to flow from the web directly into the felt. At a minimum, this water must flow around the plastic material prior to flowing into the web, and this restriction of the water flow must reduce the dewatering capability of the felt. Since the primary purpose of a felt is to allow press dewatering, this has to be a serious problem for relatively large designs. Claim 13 specifically requires that the stitched pattern allows the flow of water through the stitching material into the water holding substrate.

Additionally, the use of the stitched material as called for in claim 9 is conducive to the use of a flow-control material as described in U.S. Patent No. 5,372,876 (Johnson patent). In fact, as called for in new claims 18 and 19, the stitched pattern may be formed in a carrier which is a flow-control layer as described in the Johnson patent. Such a structure provides the added benefit of reduced re-wet as the felt leaves the pressure roll nip and hence increased web consistency. An improvement of even 1% in final consistency, say from 39% to 40%, translates to roughly 5% greater production on a dryer-limited wet-pressed tissue machine.

Finally, the felt called for by claim 9 has one more advantage over the resin-cured technology taught by Phan '190 and Phan '730. One natural consequence of increasing the bulk of a tissue can be a reduction in tensile strength. However, such a reduction is generally undesirable, so there is generally a desire to maintain as much

tensile strength as possible while increasing bulk. This is generally achieved in the process described in the present application. Note the tensile strength decreases versus the control are all less than 30% (called for by claim 20), and some are less than 10%. Other techniques, such as embossing an already formed web, typically cause a tensile strength reduction of as much as 50%. This retention of substantial tensile strength is another advantage of the present invention versus the prior art. Since Phan '190 does not provide tensile strength data it is not possible to predict the tensile reduction caused by that process, but Figures 2, 3, 10, 11 and 16 of Phan'190 show webs that appear to have significant reduction in tensile properties versus the prior art due to extensive debonding of the web.

For the reasons given above, claim 9, and claims 10-22 dependent thereon, are patentable over the cited references. Further, the dependent claims include additional limitations not disclosed in, and in some cases contrary to, the teachings of the cited references. Thus those claims are further patentable.

Respectfully submitted,

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